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U. S. Department of Agriculture

HOUSEKEEPERS' CHAT

Thursday - November 5, 1931

(NOT FOR PUBLICATION)

Subject: "Insects and Diseases of House Plants." Information approved by the Bureau of Entomology, and the Bureau of Plant Industry, U. S. D. A.

Bulletins available: "Insects Injurious to Ornamental Greenhouse Plants."

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"I suppose," said W. R. B., the Garden Adviser, "that as long as we have houses and housekeepers, they will have house-plants, and we will be asked all sorts of questions about the care of such plants, especially about the difficulties that the owners of the plants run into."

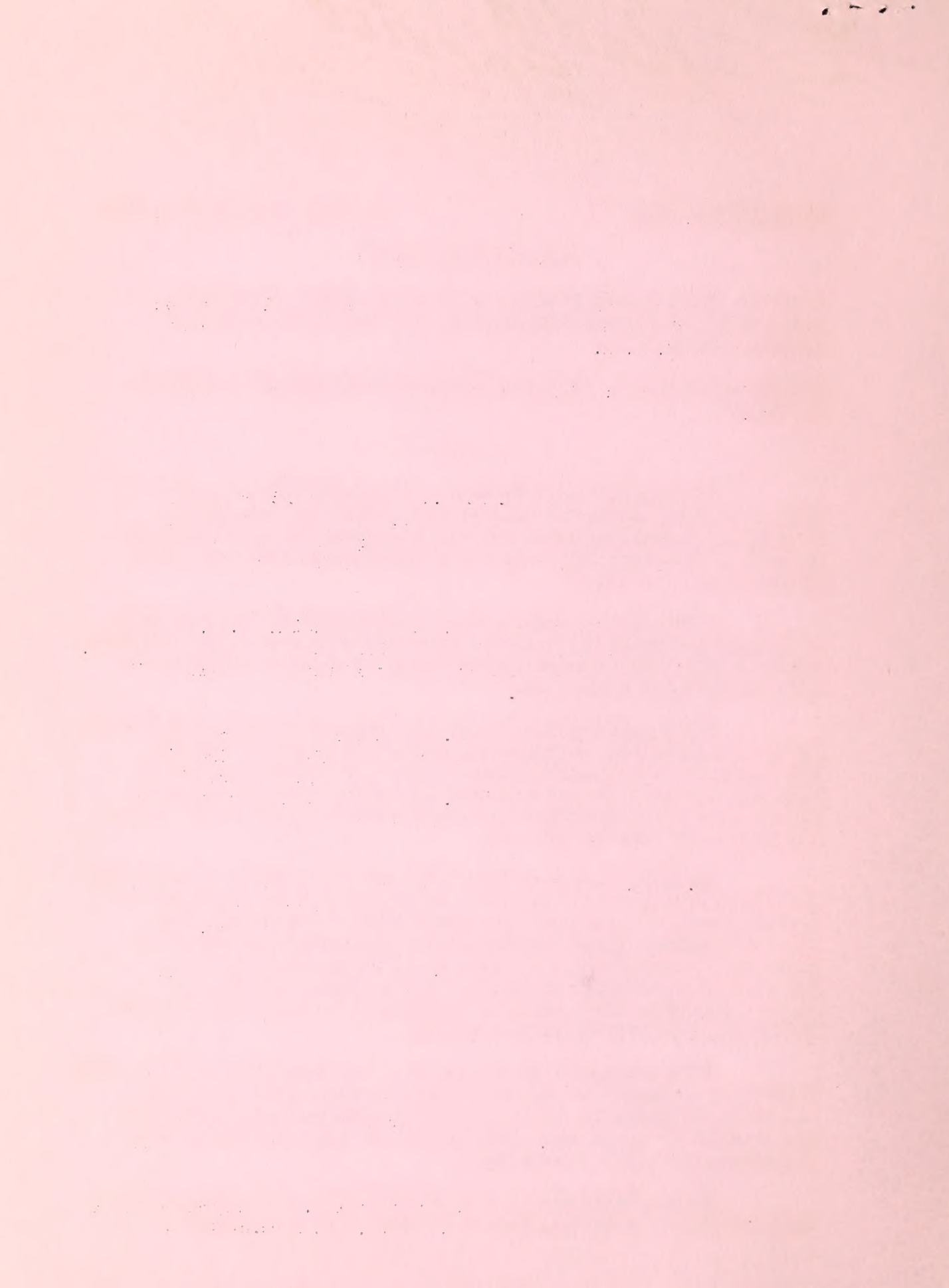
"What is the trouble now," I questioned as W. R. B. went on searching through his bulletin files for some particular bulletin. "Here it is," said he as he spread a copy of Farmers' Bulletin No. 1362 on the table before him.

Now Farmers' Bulletin No. 1362 happens to be on the subject of Insects Injurious to Ornamental Greenhouse Plants. That is the title of it, but house plants happen to be greenhouse plants when they are kept in a greenhouse, and so the same insects that attack them in the greenhouse are very liable to give trouble when the plants are kept in the home.

W. R. B. says that every time you buy a plant on the market or from the florist you are liable to get a new breed of insect or a fresh supply of some one you already have. True enough, the florists fumigate their greenhouses and take every precaution to keep their plants free from insects, but in spite of all this, undesirable insects are frequently on the plants when you get them; then, under the conditions of the living room, these insects thrive and soon produce large families.

Take the mealybug, for example, it looks like a little downy white tuft of cotton on the under sides of the leaves and along the veins or hidden in the leaf axils or pockets where the leaves are attached to the stems. Sometimes they form large masses and are always difficult to eradicate.

House plants need a bath occasionally, and a good soapsuds bath followed by a rinsing with cold water, and a careful re-



removal of every remaining insect with a splint or a toothpick will go a long ways toward keeping the plants free from mealybugs.

After the plants are given their bath, and are then gone over to get any remaining insects, they will need careful watching for several days to detect and remove any of the insects that may have escaped the general clean-up. About 30 days after the general clean-up the plants should be gone over again, because the chances are that in spite of every precaution a few of the insects have remained on the plants to start a new brood.

Scale insects, those soft-bodied, round, oval, oyster-shell or tortoise-shell shaped insects that live under hard scales that they form over their bodies are especially difficult to get rid of. The soap and water bath is probably best for them, the same as it is for the mealybugs, or a special solution for removing the scale insects is to first dissolve a cube of laundry soap about an inch in size in a gallon of water. You may have to heat the water a trifle in order to get the soap to dissolve, then let it cool and add a teaspoonful of nicotine sulphate. Stir thoroughly, then wash the plant in this solution and rinse it with clean, cold water about an hour or so after it is washed. The idea is to let the nicotine soap solution stay on the plant long enough for it to penetrate underneath the shells of the scale insects and poison their soft bodies by contact. As a matter of fact, very few plants will be injured if the nicotine-soap solution is left on them.

Now do not make the mistake that one of my neighbors made when she thought that the fern spores on the under side of the fronds of her pet fern were scale insects. You can easily tell the difference because the spores on the under side of the fern fronds are arranged in a regular manner, and not hit or miss like the scale insects. These spores are the seeds of the fern and appear at certain periods and are perfectly natural. The presence of the scale insects, on ferns especially, is often indicated by a yellowing of the leaves. These scale insects are fairly easy to see without the aid of a magnifying glass, but they are very hard to get rid of.

Now here is another pest that bothers house plants that is a great deal harder to control than scale insects or mealybugs. It is called the red spider, and it is a little red or yellowish mite that is very difficult to see without the aid of a magnifying glass. When it once gets started on house plants, it increases until there are great masses of the mites, and they collect in tiny webs which are spun in the angles of the leaves, or where the leaf attaches to the stem of the plant.

A good bath in soapy water will go a long ways toward removing these mites, or frequent syringing or spraying of the plants with clear cold water is effective in knocking them off and destroying them. The nicotine sulphate and soap solution recommended for the control of the scale insects is perhaps after all the best preparation for controlling the red spider on house plants. The main thing is to wash every portion of the plant, especially down in the

places where the leaves attach to the stems, and in the folds or angles of the leaves.

In the greenhouses the florists control these insects by fumigating the plants, but that is out of the question for the average householder who has but a few plants in the living room.

Another method of controlling the red spider is to dust the plants with very fine or "dusting" sulphur, not the ordinary sulphur that you buy in the drugstore, but a special sulphur sold by the seed dealers and florists for dusting plants.

Plant lice or aphids are soft green, brown, or black sucking insects which are usually found on the undersides of the leaves and cause the leaves to curl. This curling of the leaves forms a sort of protection for the insects. If you were to bring home a new plant for your window and it should have upon it three or four of these aphids, the chances are that within thirty days, not only the original plant, but nearly every plant you have in your sunny south window, will be almost covered with these insects.

Now the soapsuds bath with the nicotine sulphate added to it is very effective in controlling many forms of sucking insects. You can not poison them by dusting them with the ordinary poison, because they do not eat the surface of the leaves, but bore into the leaves and the tender stems of your plants and suck the sap or juices of the plant. For that reason you have to kill them by the use of what is known as contact poisons, or by suffocating them. Now nicotine sulphate is a contact poison and it also gives off a gas which suffocates or smothers the insects. It can be applied either in the form of a liquid with soap, as I have already suggested, or as a dust.

This includes the most important of the insects that work on the leaves and stems of house plants, and they are the ones that we see and fight the most.

- There is another class of insects that work in the soil of our house plants, and in many cases are more harmful than those that work on the leaves and stems. Ordinary earthworms often injure the roots of the plants by burrowing and working in the soil.

Then there are some soil-working worms of another type; these are white, harmless looking larvae, very different from earthworms, and they eventually emerge into the air as small flies, called fungous knats. Here is the way to get rid of them, and, by the way, this treatment will kill most of the earth worms at the same time. First, get a piece of quicklime the size of a small teacup. Place it in a vessel, and add a little water to start it slaking, increasing the quantity of water and keeping the lime covered while it boils and slakes, then, when it is through sputtering, add enough water to bring the total up to two gallons, stir it thoroughly, and let it stand until the remains of the lime has settled to the bottom, leaving a clear liquid. Pour this off carefully and water the plants with it.

The lime solution, however, should not under any circumstances be used on azaleas, because they require an acid soil, and the use of lime will make the soil alkaline and cause the azaleas to die.

Another simple and very effective remedy for all of these soil insects is to drench the soil with a solution prepared by dissolving a tablet of corrosive sublimate (commonly called bichloride of mercury) in one pint of water. These are the small coffin-shaped tablets that are used in hospitals and sick rooms as a disinfectant, but remember that this substance is very poisonous and needs to be handled very carefully. A watering with it about once a month, but no oftener, will do no harm to the plants. The bichloride of mercury solution, however, is about the most effective remedy for ~~many~~ insect and disease troubles in the soil of house plants.

Tomorrow: "A Low-cost Dinner."

1. The first part of the paper is devoted to a general discussion of the problem of the existence of solutions of the system of equations (1) for arbitrary values of the parameters α and β . It is shown that the system has solutions for all values of the parameters α and β if the function $f(x)$ is continuous and has a bounded derivative.

2. In the second part of the paper the problem of the existence of solutions of the system of equations (1) for arbitrary values of the parameters α and β is solved. It is shown that the system has solutions for all values of the parameters α and β if the function $f(x)$ is continuous and has a bounded derivative. The solutions are expressed in terms of the function $f(x)$ and the parameters α and β .

3. The third part of the paper is devoted to a general discussion of the problem of the existence of solutions of the system of equations (1) for arbitrary values of the parameters α and β . It is shown that the system has solutions for all values of the parameters α and β if the function $f(x)$ is continuous and has a bounded derivative.